



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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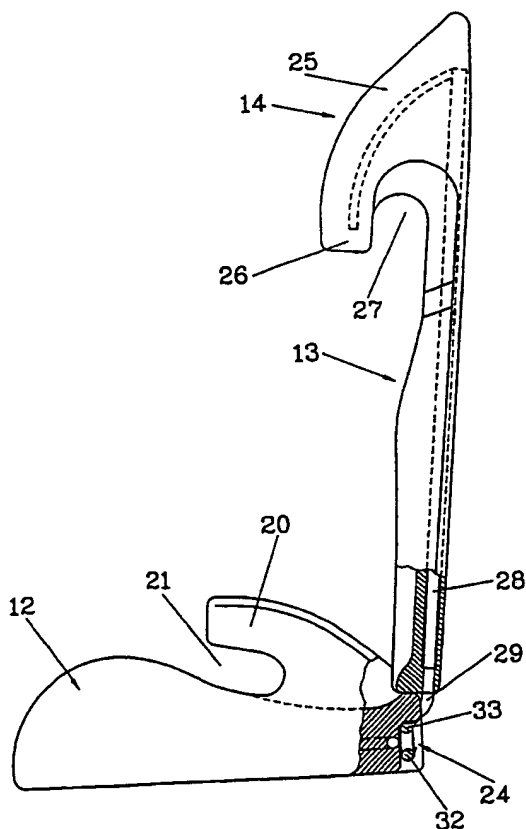
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With international search report.

(54) Title: A CHILD SEAT FOR A VEHICLE SEAT

## (57) Abstract

A child seat (11) incorporating seat portion (12), backrest (13) and headrest (14) integrated therewith, which are designed to be positioned on a vehicle seat (15) and of the type where the ordinary 3-point seat belt (16) of the seat is used for holding the child, and where the child seat (11) is equipped with an adjustment and arresting device (37) for raising and lowering the backrest (13) and for arresting it in different levels relative to the seat portion (12), for position adjustment of the headrest (14) in relation to the length of the upper part of the child's body.



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A CHILD SEAT FOR A VEHICLE SEAT

The present invention refers to a child seat incorporating seat portion, backrest and headrest integrated therewith, which are designed to be positioned on a vehicle seat and of the type where the ordinary 3-point seat belt of the seat is used for holding the child.

Background of the invention

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The attachments for 3-point seat belts in passenger cars are positioned for suiting adult passengers and can not be used for small children (from about 4 to 10 years of age), as the child is not held sufficiently laterally and as the shoulder portion of the belt due to its location will be situated too close to the child's neck.

From EP-A-0 155 784 is earlier known a child seat for vehicles incorporating seat portion, backrest and headrest integrated therewith, which together form a unit to be positioned on a vehicle seat, and where the ordinary 3-point seat belt of the vehicle is used for holding the child. This child seat represents an aid, which makes it possible to use the ordinary 3-point seat belt for holding the child, without risk that the shoulder portion will contact the child's neck, but only during the comparatively short period of time when the body size of the child corresponds to the size for which the child seat is built. When the child is growing this child seat will soon give the child an unsatisfactory support and retention and the child may even be hurt by the belt, and it therefore is necessary to obtain another, larger child seat.

Purpose and most essential features of the invention

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The purpose of the invention is to provide a child seat, which is safely secured laterally by the ordinary 3-point

seat belt, which gives the child's head a good lateral support and which guides the diagonal belt portion, thus that it is always situated on the shoulder of the child and at a satisfactory distance from the neck, and this during a  
5 period of time of about 6 years of the adolescence of the child, without the need to obtain a larger child seat. These tasks have been solved in that the child seat is equipped with an adjustment and arresting device for raising and lowering the backrest and for arresting it in different  
10 levels relative to the seat portion, for position adjustment of the headrest in relation to the length of the upper part of the child's body.

#### Description of the drawings

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The invention hereinafter will be further described with reference to the accompanying drawings, which show some embodiments.

20 Fig. 1 shows the child seat according to the invention in a front view.

Fig. 2 shows the child seat according to Fig. 1 in side elevation and partly in section.

Fig. 3 shows the seat portion of the child seat in a view  
25 from above.

Fig. 4 shows in bigger scale the coupling device of the child seat for interconnection of seat portion and backrest.

Fig. 5 shows in bigger scale a planar view of an adjustment and arresting device for adjustment and arresting of the  
30 level of the backrest.

Fig. 6 is a view analogous with Fig. 1 of a child seat according to a modified embodiment.

Fig. 7 is a side view of the child seat shown in Fig. 6.

Fig. 8 is a front view of a modified seat portion according  
35 to the invention.

Description of embodiments

The child seat 11 according to the invention, consists of a seat portion 12, a backrest 13 and a headrest 14 integrated therewith. At 15 is intimated a vehicle seat and 16 shows a 3-point seat belt. This in turn consist of a hip portion 17 and a diagonal portion 18.

The seat portion 12 according to Fig. 1-3 is concave thereby forming raised side edge portions 19, which towards the rearmost part of the seat portion merges into hook-formed guiding yokes 20, with the yoke opening facing towards the forward edge of the seat portion. The framework of the seat portion consists of an elastic material, e.g. propene plastic, which is reinforced with a thread frame 22, which extends from and along the rear edge of the seat portion, through a part of the framework and with a loop-formed portion into the guiding yokes 20. At the rearmost edge of the seat portion 12, two snapper attachments 23 are fitted to the thread frame 22, which snapper attachments have C-shaped cross sections, such as shown in Fig. 4.

The snapper attachments 23 are designed for cooperation with a coupling device 24 provided below the lower edge of the backrest 13. The backrest at its upper part merges into the headrest 14, which is provided with inclined side portions 25, which in its lower part, where the headrest merges into the backrest, is designed with upper guiding yokes 26, of a type similar to the guiding yokes 20 of the seat portion, and which upper guiding yokes have downwardly facing yoke openings 27.

The backrest is reinforced by a tubular reinforcing frame 28, in which is telecopically displaceably arranged an extension rod 29, the lower end of which situated outside the backrest being U-shaped. At the upper part of the reinforcing frame 28 is attached a thread reinforcement 31,

which extends into the upper guiding yokes 26. The U-shaped part 30 of the extension rod 29 is provided with a lateral stay 33 arranged in parallel with the middle portion 32 of the U-shaped part. The middle portion 32 and the lateral stay 33 form part of the coupling device 24 of the reinforcing frame 28 and are intended to cooperate with the cross-sectionally C-shaped snapper attachments 23 (see Fig. 4).

10 When the backrest 13 is interconnected with the seat portion 12, the middle portion 32 of the U-shaped part is positioned in the lower, curved shank 34 of the cross-sectionally C-shaped snapper attachment 23, whereupon the backrest is swung up to vertical position, thus that the lateral stay 33 will snap in under the upper, curved shank 35 of the snapper attachment 23. With a simple hand grip it is thus possible to assemble and to dismount the backrest from the seat portion 12.

20 The height adjustment of the backrest is effected by means of an adjustment and arresting device 37 via a push button 38 on the rear side of the backrest, whereby a springy securing plate 39 - see Fig. 5 - due to the leverage lifts a locking shoulder 40 out of one of the recesses 41, which are provided along the extension rod 29, thus that this may be displaced relative to the reinforcing frame 28.

A modified embodiment of the child seat is shown in Fig. 6 and 7, which embodiment differs from the one shown in Fig. 1 - 5 in that the lower guiding yokes 20 are not arranged at seat portion 12 but at the lower end of the backrest 13. In this embodiment the reinforcing frame 28 is also equipped with thread reinforcements, which reinforce the lower guiding yokes of the backrest.

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Instead of providing the guiding yokes 20 above the seat portion, such as shown in Fig. 1 and 2, it is also possible

that the guiding yokes 20 are situated below the seat surface, such as shown in Fig. 8.

CLAIMS

1. A child seat (11) incorporating seat portion (12), backrest (13) and headrest (14) integrated therewith, which are  
5 designed to be positioned on a vehicle seat (15) and of the type where the ordinary 3-point seat belt (16) of the seat is used for holding the child,  
c h a r a c t e r i z e d   t h e r e i n ,  
that the child seat (11) is equipped with an adjustment and  
10 arresting device (37) for raising and lowering the backrest (13) and for arresting it in different levels relative to the seat portion (12), for position adjustment of the headrest (14) in relation to the length of the upper part of the child's body.

15

2. A child seat as claimed in claim 1,  
c h a r a c t e r i z e d   t h e r e i n  
that the headrest (14) is provided with inclined side portions (25), each one of which in its lower portion merging  
20 into the backrest (13) being designed with a guiding yoke (26), having a yoke opening (27) facing downwards for receiving the diagonal portion (18) of the belt (16).

3. A child seat as claimed in claim 1 or 2,  
25 c h a r a c t e r i z e d   t h e r e i n ,  
that the seat portion (12) is provided with hook-formed guiding yokes (20) for guiding the hip portion (17) of the belt (16) at or adjacent the side portions (19) of the seat portion (12).

30

4. A child seat as claimed in claim 2,  
c h a r a c t e r i z e d   t h e r e i n ,  
that the lower guiding yokes (20) are provided at the lower end of the backrest (13) facing the seat portion (12).

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5. A child seat as claimed in claim 1,  
c h a r a c t e r i z e d   t h e r e i n,  
that the adjustment and arresting device (37) is made integrated with a reinforcing frame (28) provided in the backrest  
5 (13), and which reinforcing frame on one hand is adapted to extend in the longitudinal direction of the backrest and on the other hand forms the reinforcement of the guiding yokes (20,26).
- 10 6. A child seat as claimed in claim 5,  
c h a r a c t e r i z e d   t h e r e i n,  
that the reinforcing frame (28) of the backrest (13) and an extension rod (29) cooperating therewith, are telescopically displaceable in each other, and that the lower part (30) of  
15 the extension rod is designed with a coupling device (24) for cooperation with snapper attachments (23) provided at the rearmost edge of the seat portion (12).
- 20 7. A child seat as claimed in claim 6,  
c h a r a c t e r i z e d   t h e r e i n,  
that the coupling device (24) consist of the middle portion (32) of the U-shaped extension rod (29), and of a lateral stay (23) arranged spaced apart from and in parallel with this middle portion, and that the snapper attachments (23)  
25 cross-sectionally are C-shaped and designed to receive the coupling device (24) between the upper (34) and lower (32) curved shanks of the C.

FIG. 1

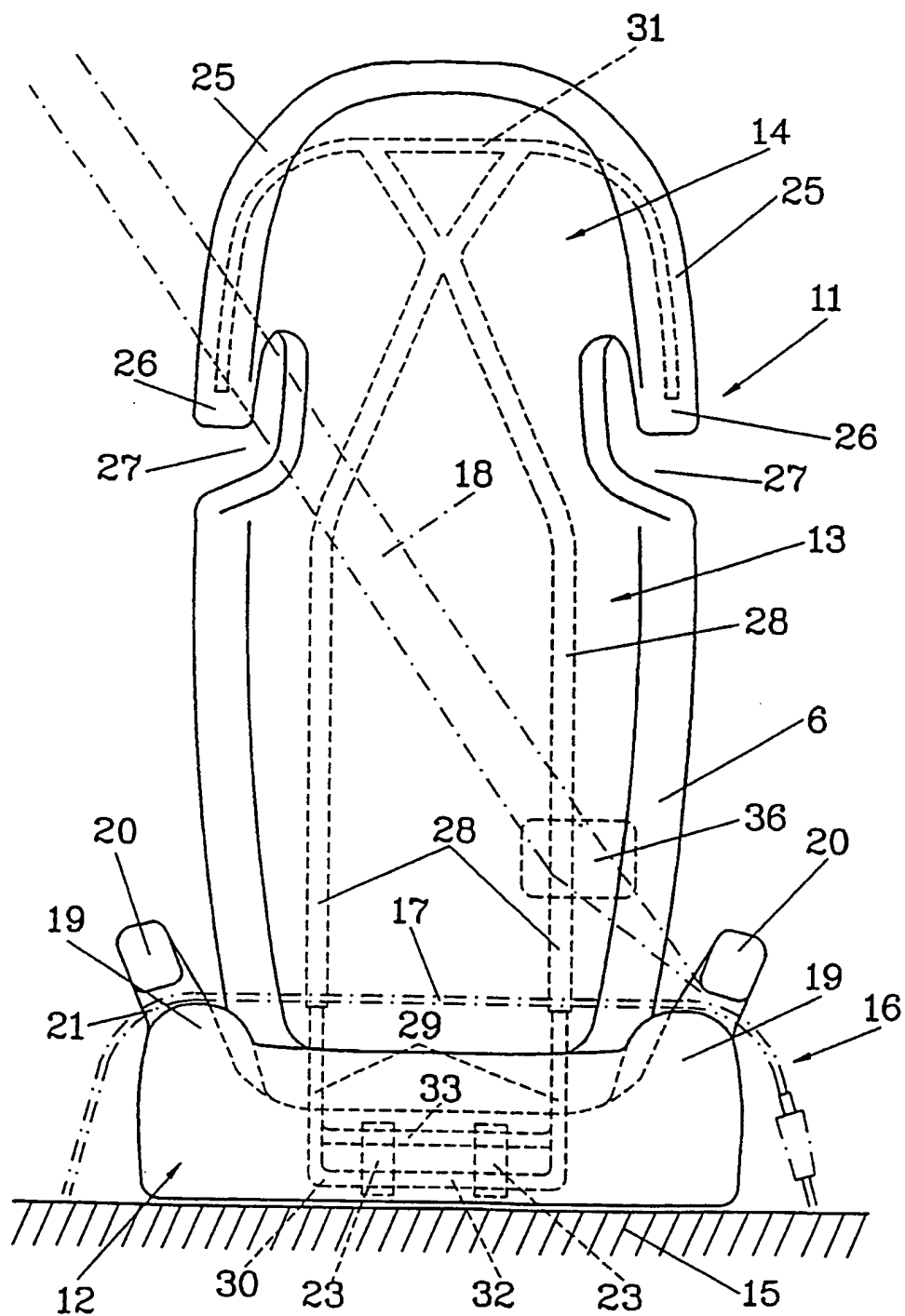


FIG. 2

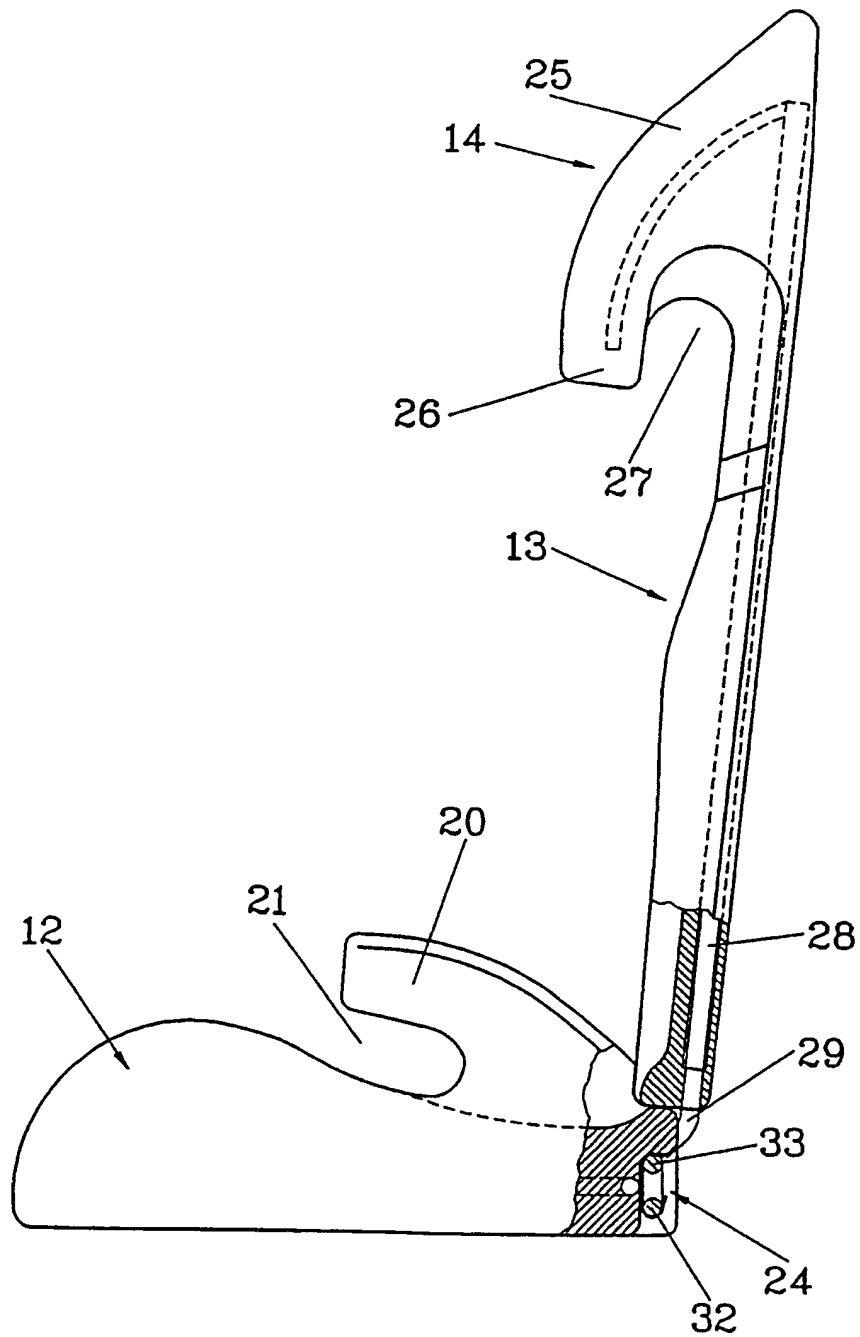


FIG. 3

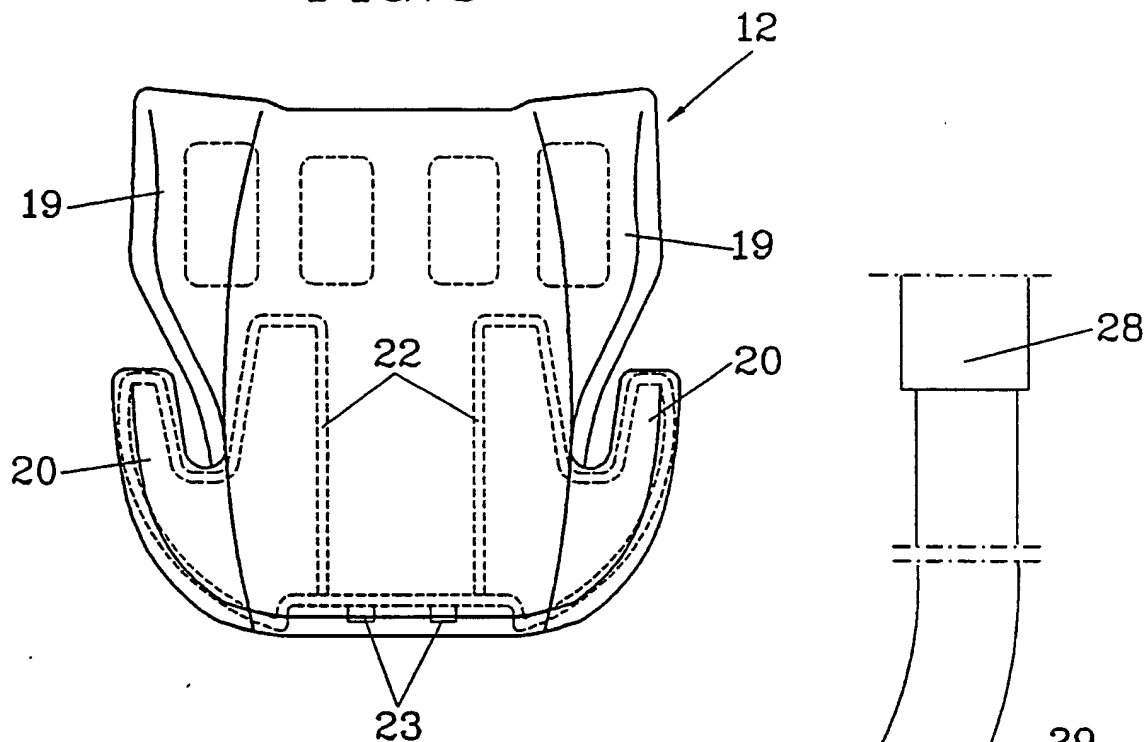


FIG. 4

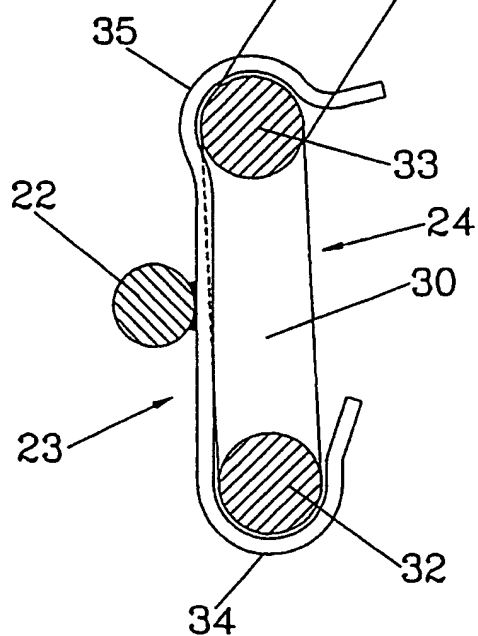


FIG. 5

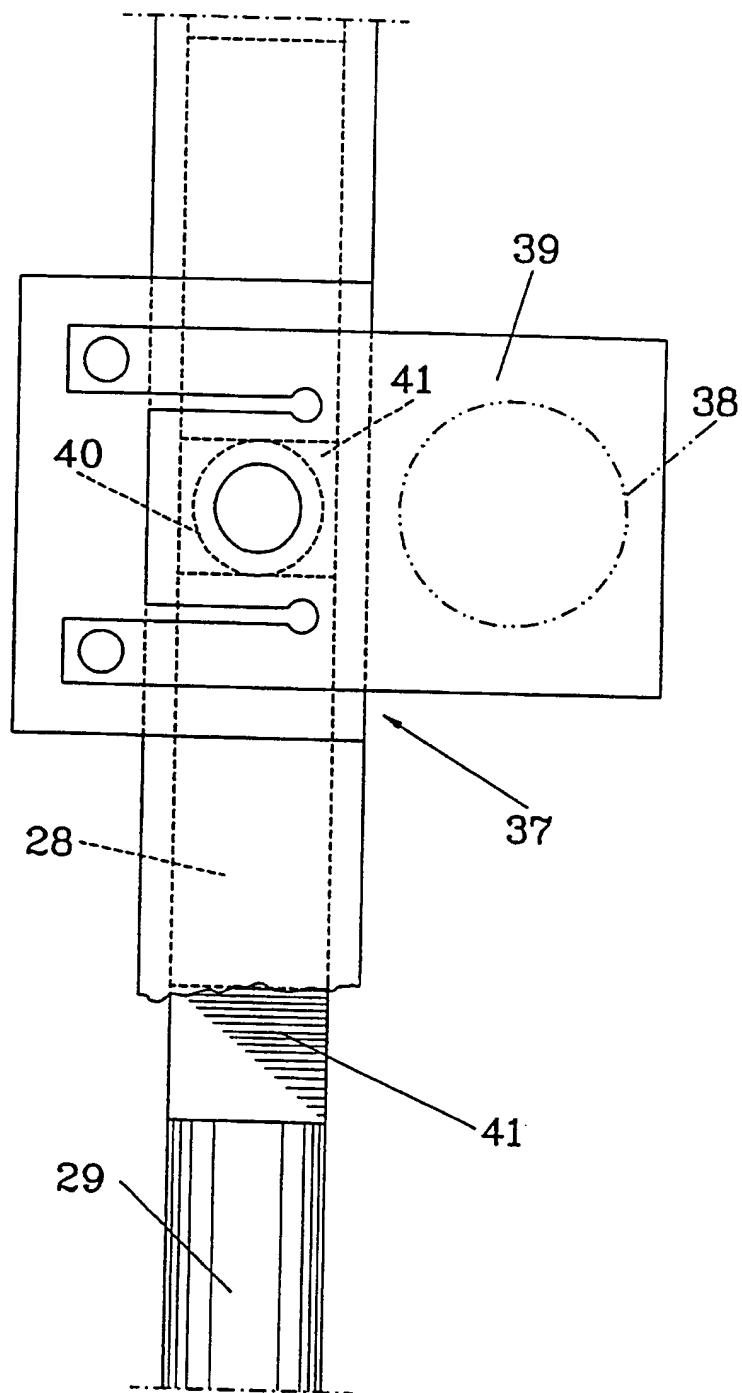


FIG. 6

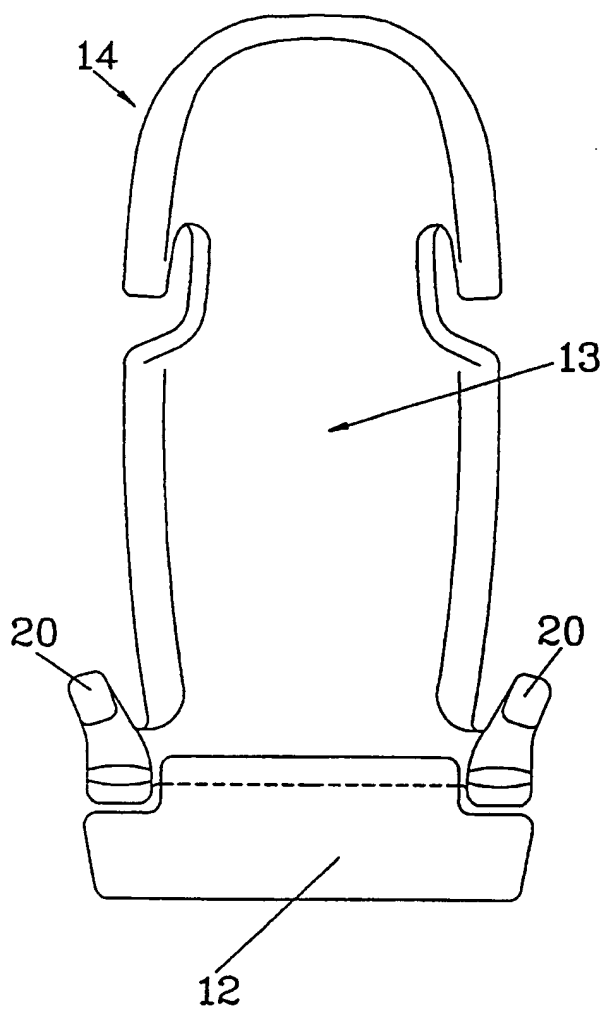


FIG. 7

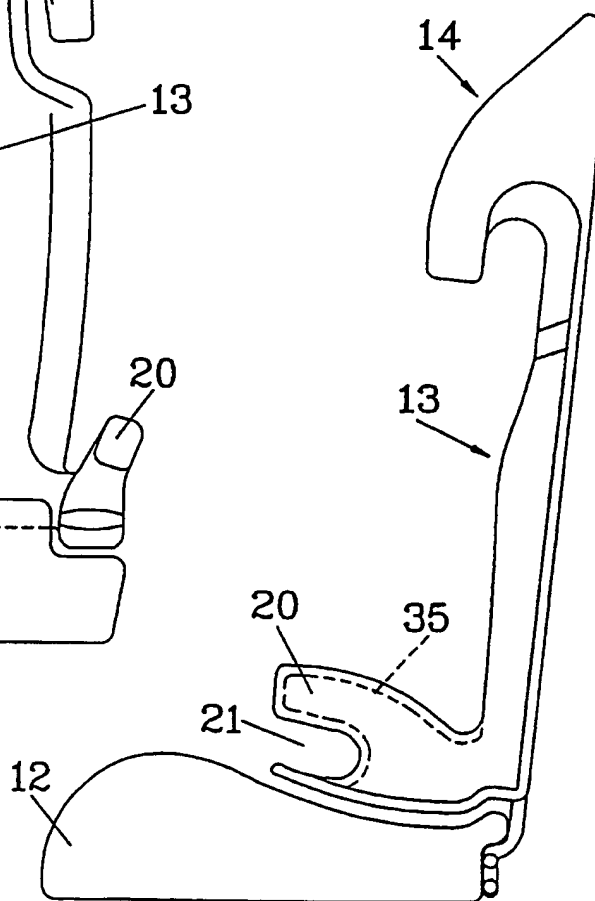
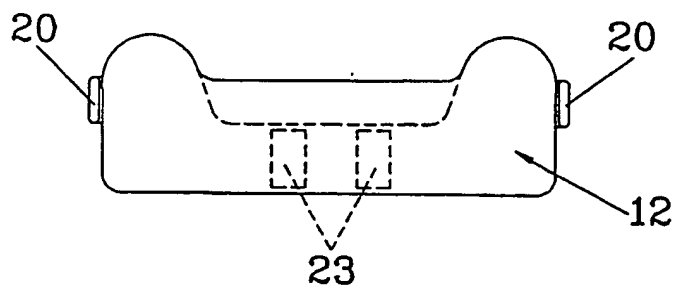


FIG. 8



# INTERNATIONAL SEARCH REPORT

International Application No PCT/SE 90/00579

<b>I. CLASSIFICATION OF SUBJECT MATTER</b> (If several classification symbols apply, indicate all) <sup>6</sup> According to International Patent Classification (IPC) or to both National Classification and IPC <b>IPC5: B 60 N 2/28</b>											
<b>II. FIELDS SEARCHED</b> <div style="text-align: right; margin-right: 100px;">Minimum Documentation Searched<sup>7</sup></div> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%; padding: 5px;">Classification System</td> <td style="padding: 5px;">Classification Symbols</td> </tr> <tr> <td style="padding: 5px; vertical-align: top;">IPC5</td> <td style="padding: 5px; vertical-align: top;">A 47 D, B 60 N</td> </tr> </table> <div style="text-align: center; margin-top: 5px;">Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in Fields Searched<sup>8</sup></div> <p style="margin-top: 10px;">SE,DK,FI,NO classes as above</p>			Classification System	Classification Symbols	IPC5	A 47 D, B 60 N					
Classification System	Classification Symbols										
IPC5	A 47 D, B 60 N										
<b>III. DOCUMENTS CONSIDERED TO BE RELEVANT<sup>9</sup></b> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%; padding: 5px;">Category<sup>10</sup></th> <th style="width: 60%; padding: 5px;">Citation of Document,<sup>11</sup> with indication, where appropriate, of the relevant passages<sup>12</sup></th> <th style="width: 30%; padding: 5px;">Relevant to Claim No.<sup>13</sup></th> </tr> </thead> <tbody> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">Y</td> <td style="padding: 5px;">           EP, A2, 0155784 (ASE (UK) LIMITED)            25 September 1985, see page 4, line 21 -            line 36; page 5, line 1 - line 26;            figure 1  <div style="text-align: center;">--</div> </td> <td style="text-align: center; vertical-align: top; padding: 5px;">1,2,3,5</td> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">Y</td> <td style="padding: 5px;">           US, A, 3762768 (HYDE ET AL) 2 October 1973,            see column 3, line 38 - line 48;            column 3, line 60 - line 67;            column 4, line 1 - line 2;            figures 1,2  <div style="text-align: center;">--</div> <div style="text-align: center;">-----</div> </td> <td style="text-align: center; vertical-align: top; padding: 5px;">1,2,3,5</td> </tr> </tbody> </table>			Category <sup>10</sup>	Citation of Document, <sup>11</sup> with indication, where appropriate, of the relevant passages <sup>12</sup>	Relevant to Claim No. <sup>13</sup>	Y	EP, A2, 0155784 (ASE (UK) LIMITED) 25 September 1985, see page 4, line 21 - line 36; page 5, line 1 - line 26; figure 1 <div style="text-align: center;">--</div>	1,2,3,5	Y	US, A, 3762768 (HYDE ET AL) 2 October 1973, see column 3, line 38 - line 48; column 3, line 60 - line 67; column 4, line 1 - line 2; figures 1,2 <div style="text-align: center;">--</div> <div style="text-align: center;">-----</div>	1,2,3,5
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<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p><b>* Special categories of cited documents:<sup>10</sup></b></p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </div> <div style="width: 45%;"> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance, the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"&amp;" document member of the same patent family</p> </div> </div>											
<b>IV. CERTIFICATION</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;">           Date of the Actual Completion of the International Search  <b>30th November 1990</b> </td> <td style="width: 50%; padding: 5px;">           Date of Mailing of this International Search Report  <b>1990 -12- 06</b> </td> </tr> <tr> <td style="width: 50%; padding: 5px;">           International Searching Authority  <div style="text-align: center; margin-top: 10px;"><b>SWEDISH PATENT OFFICE</b></div> </td> <td style="width: 50%; padding: 5px;">           Signature of Authorized Officer  <div style="text-align: center; margin-top: 10px;">   <b>Christer Jönsson</b> </div> </td> </tr> </table>			Date of the Actual Completion of the International Search <b>30th November 1990</b>	Date of Mailing of this International Search Report <b>1990 -12- 06</b>	International Searching Authority <div style="text-align: center; margin-top: 10px;"><b>SWEDISH PATENT OFFICE</b></div>	Signature of Authorized Officer <div style="text-align: center; margin-top: 10px;">   <b>Christer Jönsson</b> </div>					
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**ANNEX TO THE INTERNATIONAL SEARCH REPORT  
ON INTERNATIONAL PATENT APPLICATION NO.PCT/SE 90/00579**

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report.  
The members are as contained in the Swedish Patent Office EDP file on **90-11-01**  
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP-A2- 0155784	85-09-25	NONE	
US-A- 3762768	73-10-02	NONE	